

# Prevalence of Mixed Infections among Females with Vaginitis in a Tertiary Care Center

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**Abstract:** *Introduction:* Vaginal discharge is a common problem among women and is associated with significant morbidity. Mixed infections are one among the causes of vaginal discharge. *Aim:* To study the prevalence of mixed infections in patients with vaginitis in a tertiary care center. *Materials and Methods:* A Retrospective observational study was conducted in a tertiary care center from Jan 2014- Dec 2015. Total of 7378 females of all age groups who were willing for examination were included in the study. *Results:* Among the total 7378 females, 1499 (20.3%) females were detected to have vaginitis. Most common infection noted was BV (47%) followed by VVC (38%). Prevalence of mixed infection was 7%. 76% were in the age group of 20-49 yrs. 94% were married. 14% were RVD positive. 37% were asymptomatic. *Conclusion:* Women with asymptomatic infections are at high risk of having undetected complications and may be a hidden reservoir.

**Keywords:** Bacterial Vaginosis (BV), Trichomoniasis(TV),Vulvovaginal Candidiasis (VVC), Retroviral Disease (Rvd), Mixed Infections

## 1. Introduction

Vaginal discharge is a common problem among women and is associated with significant morbidity. Early diagnosis and appropriate treatment is essential. Mixed infections are found to be one among the causes of vaginal discharge.

General examination, Genital examination & Per speculum examination was done. Specimen was collected for saline wet mount preparation, 10% KOH preparation, gram stain and culture for candida, Trichomonas vaginalis, & gonococci. Serology for HIV, VDRL was done.

## 2. Aim and Objective

To study the prevalence of mixed infections in patients diagnosed with vaginitis in a tertiary care center

Bacterial vaginosis was diagnosed by modified Amsel's criteria (>20% clue cells). Vaginal candidiasis was diagnosed by 10% KOH wet mount and gram staining showing budding spores and pseudohyphae. Trichomoniasis was diagnosed by presence of motile flagellated protozoa.

## 3. Materials and Methods

A Retrospective observational study was conducted in a tertiary care center over a period of two years from Jan 2014- Dec 2015. Newly registered female clinic attendees of all age groups were studied. Total of 7378 females who were willing for examination were included. Pregnant and menstruating women were not included.

## 4. Results

Among the study population of 7378 females, 1499(20.3%) females were detected to have vaginitis. Most commonly affected age group was 20-39 years. (Table:1)

Table 1: Age Distribution

| Age       | Total | TV+ candida | BV+ candida | BV+ TV | BV  | TV  | Candida |
|-----------|-------|-------------|-------------|--------|-----|-----|---------|
| <20 yrs   | 770   | 1           | 4           | 0      | 64  | 12  | 50      |
| 20-29 yrs | 1329  | 5           | 12          | 6      | 245 | 42  | 150     |
| 30-39 yrs | 1952  | 7           | 26          | 11     | 218 | 35  | 160     |
| 40-49 yrs | 1997  | 3           | 22          | 8      | 105 | 19  | 100     |
| >50yrs    | 1330  | 3           | 0           | 0      | 80  | 10  | 103     |
| TOTAL     | 7378  | 19          | 63          | 25     | 712 | 118 | 563     |

Distribution of Retroviral disease among the mixed infection was BV + VVC -12, BV + TV – 10 , TV+ VVC – 8. 93% were married among the study population.

Mixed infection constituted 106 (7%).

Among the 1499 patients, Bacterial vaginosis was 712 (47%), followed by Vulvovaginal Candidiasis 563(38%) and Trichomoniasis 118( 8%).

Percentage of distribution of mixed infection is shown in (Fig. No.1)

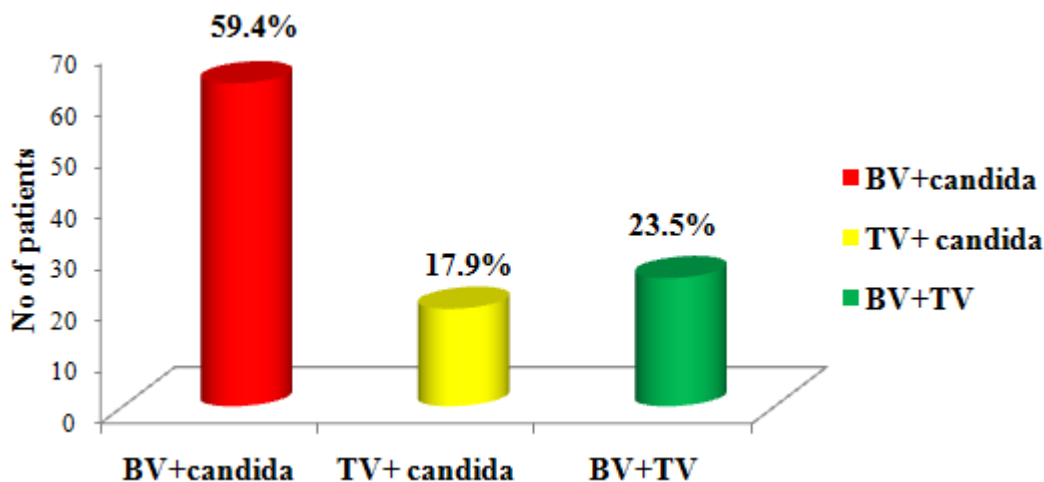


Figure 1: Percentage of distribution of mixed infections

37% of Females with mixed infection were Asymptomatic (Fig No.2)

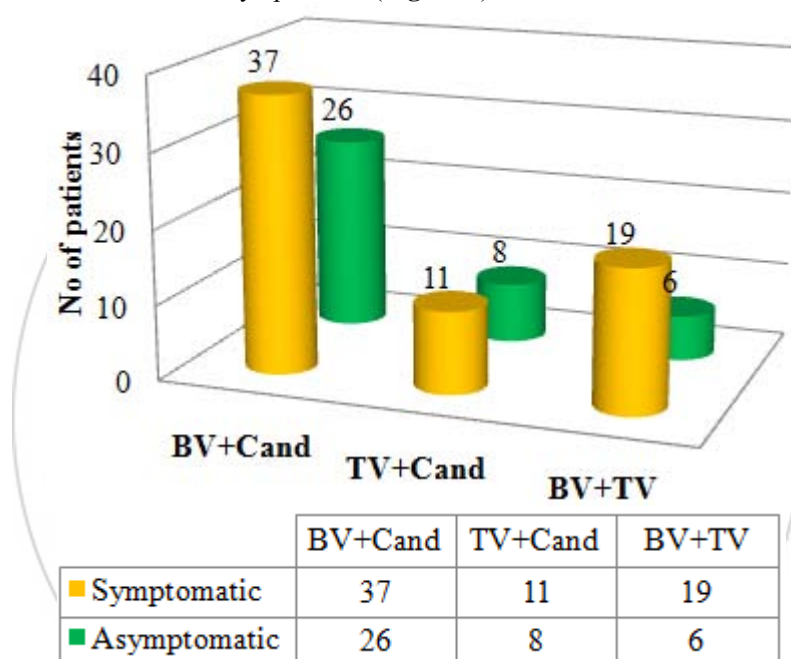


Figure 2

## 5. Discussion

### Bacterial Vaginosis

Bacterial vaginosis is a polymicrobial syndrome characterized by disturbance in the vaginal ecosystem where normal lactobacilli is replaced with overgrowth of anaerobic and facultative vaginal commensal organisms.

The most common infection noted was BV (47%) followed by VVC (38%) which was similar to the study done by Puri<sup>(1)</sup> et al on the various cause of vaginal discharge among females in sexually active group where BV was (45%) and VVC (31%).

Prevalence of bacterial vaginosis in the present study was 10.7%.

Prevalence is less compared to study done by Anuradha et al<sup>(2)</sup> in which prevalence was 17.3% .

### Trichomoniasis

Trichomoniasis is the most common curable sexually transmitted disease affecting sexually active group. It is associated with complications such as infertility, increased risk of acquiring HIV and other STD. Prevalence of Trichomoniasis in this study was 1.8% which is comparable with prevalence of 1.8% in study by Anuradha et al and 1.18% in Rao<sup>(3)</sup> study. Prevalence of Trichomoniasis in HIV reactive group was 32/208 (15%) which is similar (15%) to study done by Hutton Rose et al<sup>(4)</sup> .

### Vulvovaginal Candidiasis

Vulvovaginal candidiasis is common condition affecting 75% of reproductive adult women atleast once in their lifetime. It is seen in high percentage among pregnant, immuno suppressed and women on oral contraceptive pill. Prevalence of VVC in this study was 7.7% which almost coincides with VVC prevalence (7.5%) in a study by Pawanarkar and Chopra<sup>(5)</sup> who studied lower tract infection among infertile women.

Mixed infections have significant clinical and therapeutic implications. Prevalence of mixed infection in this study was 7% which is higher than study by Sivaranjini<sup>(6)</sup> et al (5.5%) on spectrum of vaginal discharge in a tertiary center.

Prevalence of BV with candidiasis was 4.2% comparable with Rivers<sup>(7)</sup> study with prevalence of 4.4% (prevalence of bacterial vaginosis and candida mixed infection in a STD clinic).

Prevalence of Trichomoniasis with Bacterial vaginosis was 1.6%.

Prevalence of Trichomoniasis with Candidiasis was 1.2%.

## 6. Conclusion

Women with asymptomatic infections are at high risk of having undetected complications and may be a hidden reservoir. All reproductive aged females should be routinely screened for reproductive tract infections which would help in right diagnosis and timely management. Emphasis should be given to reproductive health care and point of care screening which could dramatically improve the health of females and reduce the risk of acquisition of HIV and other STD related gynecological complications such as infertility, pelvic inflammatory disease, adverse pregnancy outcomes.

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